AMENDMENT

IN THE SPECIFICATION

Please amend paragraph 22 as follows:

Refrigerant circulates though the closed circuit ~~cycle~~ system 20. Preferably, carbon dioxide is used as the refrigerant. Although carbon dioxide is described, other refrigerants may be used. Because carbon dioxide has a low critical point, systems utilizing carbon dioxide as a refrigerant usually require the vapor compression system 20 to run transcritical.

Please amend paragraph 25 as follows:

After expansion, the refrigerant flows through the passages 42 of the evaporator 28 and exits at a high enthalpy and low pressure. In the evaporator 28, the outdoor air rejects heat to the refrigerant which accepts the heat. Outdoor air 44 flows through a heat sink 46 and exchanges heat with the refrigerant passing through the ~~second heat exchanger~~evaporator 28. The outdoor air enters the heat sink 46 through the heat sink inlet or return 48 and flows in a direction opposite to or across the direction of flow of the refrigerant. After exchanging heat with the refrigerant, the cooled outdoor air 50 exits the heat sink 46 through the heat sink outlet or supply 52. The system 20 transfers heat from the low temperature energy reservoir (ambient air) to the high temperature energy sink (heated hot water). The transfer of energy is achieved with the aid of electrical energy input at the compressor 22. The temperature difference between the outdoor air and the refrigerant in the evaporator 28 drives the thermal energy transfer from the outdoor air to the refrigerant as the refrigerant passes through the evaporator 28. A fan 54 moves the outdoor air across the evaporator 28, maintaining the temperature difference and evaporating the refrigerant.

Please amend paragraph 27 as follows:

A valve 60 is positioned between the discharge 62 of the compressor 22 and the inlet 64 of the expansion valve 26. When a sensor 66 detects a condition that necessitates defrosting, a control 68 opens the valve 60 to perform a defrost cycle. Refrigerant from the discharge 62 of the compressor 22 bypasses the gas cooler 24 and enters the inlet 64 of the expansion device 26. The control 68 also turns the water pump 32 off to stop the flow of cooled ~~water~~ fluid 34 into the gas cooler 24. In one example, defrosting is needed when frost accumulates on a coil of the evaporator 28.

Please amend paragraph 31 as follows:

Figure 3 schematically illustrates a thermodynamic diagram of the vapor compression system 20 in the defrost mode. The refrigerant flows through the compressor 22 and exits at high enthalpy and high pressure, shown as point E. When the valve 60 is opened, the refrigerant bypasses the gas cooler and flows through the valve 60. The refrigerant is then directed to the expansion device 26. The hot refrigerant is expanded to a low pressure by the expansion device 26, shown as point F. The hot refrigerant then flows through the evaporator 28. The hot refrigerant in the evaporator 28 rejects heat to the evaporator 28, melting the frost on the passages 42 of the evaporator 28. After passing through the evaporator 28, the refrigerant is at low enthalpy and low pressure, shown by point G. The refrigerant when re-enters the compressor 22, completing the cycle of the system 20.

Please amend paragraph 33 as follows:

Figure 5 schematically illustrates an alternate example of the system 20 of the present invention. The system 20 further includes a valve 71 positioned between the gas cooler 24 and the inlet 64 of the expansion device 26. When the sensor 66 detects a condition that necessitates defrosting, the control 68 opens the valve 60 and closes the valve 71, preventing refrigerant from the gas cooler 24 from entering the expansion device ~~28~~26. When the sensor 66 detects that frosting is no longer necessary, the control 68 closes the valve 60 and opens the valve 71, allowing refrigerant from the gas cooler 24 to enter the expansion device ~~28~~26.